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April 21, 2009

VIA ECFS

Marlene H. Dortch
Secretary
Federal Communications Commission
The Portals
445 - 12th Street, SW
Washington, DC 20554

Re: Notice of *Ex Parte* Presentation, GN Docket 09-29

Dear Ms. Dortch:

On April 7, 2009, Calix, a member of the Fiber-to-the-Home Council ("FTTH Council"), made a presentation to the staff of the Commission about the advantages of deploying fiber-to-the-home ("FTTH") networks in rural areas.[1] In this *ex parte*, the FTTH Council elaborates on that presentation and the particular issue of the viability of FTTH in rural areas.

To begin with, it is important to note the current status of FTTH deployments in the United States and specifically in rural areas.[2] Today, FTTH networks pass over 15 million households with a penetration rate of those households of approximately 30%. For rural telephone companies (so-called Tier 3 carriers) – which have approximately 8 million access lines – 8% of their customers currently subscribe to FTTH network services. (The penetration rate for non-RBOC FTTH networks exceeds 50%.) In addition, deployments of FTTH networks

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1 *See,* http://fjallfoss.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=6520205438. ("*Calix Presentation*")

2 The statistics are taken from an April, 2009 report for the FTTH Council by RVA LLC, which can be found at www.ftthcouncil.org.

by these rural telephone companies is expected to increase by 32% in 2009, and, over the next three years, more than 60% of these companies are likely to deploy FTTH infrastructure.

The growth of FTTH networks across the country is based on numerous factors, including superior capabilities, which can be efficiently expanded ("future-proof" networks), the great value these capabilities bring for economic development, and the decreasing costs of deployment.[3] For rural areas, these benefits are evidenced by the high rates of customer acceptance, which, as discussed above, exceed 50%. Moreover, these high take-rates enable FTTH networks to be viable in sparser areas.

It is for these reasons that FTTH networks are the technology used most by entities accessing broadband funding from the Rural Utilities Service ("RUS") – 37% of the "approved technologies."[4] In total, almost 400 independent telephone companies, most of whom operate in rural areas, have deployed or will soon deploy FTTH networks – an increase of 30% over last year.[5] A list of these companies, including whether RUS funding was received, is provided in the March, 2009 issue of *Broadband Properties* and is attached to this filing.[6]

As for the economic viability of FTTH networks rural areas, in a just issued article in *FTTH Prism*, Tim Nulty of ValleyFiber states, "Based on the experience of a number of "non-incumbent" FTTH projects, it is clear that it is economic to bring universal FTTH to virtually any rural area that has a density of 12/13 homes per linear mile and all or most of whose plant is aerial. These characteristics cover the overwhelming majority of rural Americans."[7] A recent survey of homes connected by FTTH by population lends support for this proposition that FTTH deployments

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3 *See, e.g.* the Comments filed by the FTTH Council in GN Docket No. 09-40 -- http://fjallfoss.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=6520210029; and *Smaller Telcos Still Committed to Fiber to the Home, Broadband Properties Magazine*, March, 2009 at 70. ("*Broadband Properties Article*")

4 *USDA Rural Development: Bringing Broadband to Rural America*, Report by the U.S. Department of Agriculture, Rural Development, June, 2007 at 6. (http://www.rurdev.usda.gov/rd/pubs/RDBroadbandRpt.pdf)

5 *Broadband Properties Article* at 70.

6 *Broadband Properties* maintains this list on-line at http://www.bbpmag.com/search.php.

7 *A Vision of Modern Broadband Telecommunications in Rural America, The FTTH Prism*, Tim Nulty, ValleyFiber, March, 2009 at 25. (http://www.chaffeefiberoptics.com/nwsltr/ftthprismvol6no2.pdf)

succeed in less dense areas. It finds that, of total FTTH connections today by non-Bell Operating Companies, more than 28% are in areas where the density is less than 24 homes per square mile.[8]

The case studies presented to the Commission by Calix make a similar point. For instance, in Minnesota, Hiawatha Broadband constructed FTTH networks in a group of small towns and rural areas (without any RUS funding). These combined small town-rural areas had the following characteristics: Wasbasha – 1700 households passed across a 12 square-mile area; Rollingstone – 300 households passed across a 4 square-mile area; Stockton – 320 households passed across an 8 square-mile; and Lewiston – 605 households passed across a 12 square-mile area.[9] (These densities, of course, are somewhat greater than those in the statements above because they combine small towns with rural areas.)

A key factor for the success of deployments in these lower density areas is not only the higher take-rate discussed above but also the decrease in the cost of deploying FTTH networks. When Bristol Virginia Utilities deployed its FTTH network starting in 2001, the cost per premise passed approached $4,000.[10] For Hiawatha Broadband, it cost approximately $800 to pass a home, and another $750 to connect it, including one set-top box.[11] This dramatic decrease is due to more sophisticated construction and connection technology and the lower cost of electronics – and it has been accompanied by substantial increases in network capability as downstream speeds have doubled and upstream speeds have tripled. Over the next five years, these capabilities are expected to continue to increase as 10 Gigabit, WDM, and 40 Gigabit systems come to market.[12]

In sum, there is ample proof in the market that FTTH networks are the choice of rural telephone companies because of their tremendous capabilities and are increasingly economically viable in less dense areas. As it issues its report and adopts new policies, the Commission should

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8 *US FTTH Homes Connected by Population Density*, RVA LCC at 4. (Data taken from the RVA 2008 FTTH Consumer Study and RVA 2009 FTTH Provider Study, both of which can be found at www.ftthcouncil.org.)

9 *Calix Presentation* at 17.

10 *The Municipal and Utility Guidebook to Bringing Broadband Fiber Optics to Your Community*, David Chafee and Mitchell Shapiro, 2008 at 25. (http://www.chaffeefiberoptics.com/nwsltr/Municipal%20and%20Utlity%20Guidebook.pdf)

11 *Overbuilding with FTTH: Successful Case Studies*, Calix, Presented at the FTTH Council Conference, September, 2008.

12 *Cost Innovations Speed Fiber Past Copper to Enable Widespread FTTH Deployment, The FTTH Prism*, John George, OFS Optics, March, 2009 at 29. (http://www.chaffeefiberoptics.com/nwsltr/ftthprismvol6no2.pdf)

endeavor to ensure that rural residents, businesses, and institutions have access to networks with these crucial and substantial capabilities so that they have similar economic and social opportunities as residents living in urban and suburban areas.

I request that this letter, which is being filed electronically, be placed in the file for the above-captioned proceeding.

Sincerely,

Thomas Cohen
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Suite 400
Washington, DC 20007
Tel. (202) 342-8518
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tcohen@kelleydrye.com
Counsel for the FTTH Council

Attachment: *Smaller Telcos Still Committed to Fiber to the Home, Broadband Properties Magazine,* March, 2009.

cc: William Dever
William Kehoe
Charles Mathias
Jennifer Prime
Matthew Warner

Smaller Telcos Still Committed to Fiber to the Home

Our most recent statistics show that independent telcos continue to lead the way in fiber-to-the-home deployments; point-to-point "active" is gaining.

By Masha Zager ■ *Broadband Properties*

ABOUT THE LIST

Since 2005, Broadband Properties has maintained a list of independent telephone companies that are deploying fiber to the premises. We've published the list several times each year. We also maintain the list online at www.bbpmag.com/search.php to enable you to search, sort and even download all of this information. The online list also includes most municipal fiber deployers, and we have also added some cable companies and others deploying FTTP as well.

Although we gather information from as many sources as we can, we know the list is not complete. To add to the list, fill in missing information or correct any errors, please contact masha@broadbandproperties.com.

Americans living outside metropolitan areas often have a difficult time finding broadband services. Coverage in small towns and rural areas may be nonexistent, or slow and expensive at best. But paradoxically, a few million households outside the reach of the major telephone companies now have access to some of the best broadband available – fiber to the home.

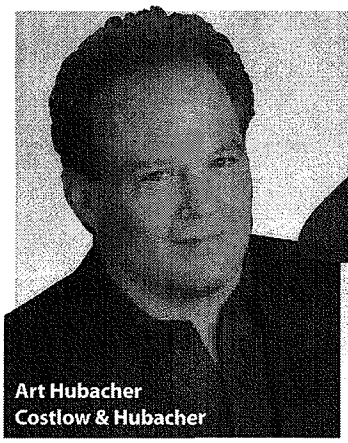
Most of these FTTH networks have been built by smaller telephone companies – some by cooperatives or mom-and-pop telcos with a few hundred or a few thousand subscribers. At least 387 independent telephone companies have deployed or are actively planning fiber-to-the-premises networks in the United States, an increase of nearly 30 since our last publication of this list in print four months ago.

Drivers for fiber deployments by independent telcos include technology breakthroughs that have made fiber competitive with copper; a commitment to local economic development; and the desire to provide triple play services.

While economic conditions have slowed fiber builds to a trickle in new developments and delayed them elsewhere, they haven't stopped the shift to fiber, nor are they likely to. Some of the drivers for FTTH investment by this group of companies include:

- Technology breakthroughs that have reduced the cost of deploying fiber in rural areas.
- A longstanding commitment to local economic development.
- A desire to provide triple-play services to residential customers.

Many of the telcos listed here are in the middle of a long-term fiber upgrade. After starting with one or two trial deployments, they commit to build out fiber over a period of years to new developments, or to areas where their copper plant is depreciated, or to places where they would like to deliver video services but can't reach with DSL. Some are moving outside their traditional service areas to cherry-pick competitive locations.



Art Hubacher
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New FTTH products for independent telcos will be introduced at the Broadband Summit, April 27–29.

Telcos that were early adopters of FTTH have also been upgrading their fiber electronics from BPON to GPON or, less often, to point-to-point Ethernet. These newer technologies fulfill the deployers' original goals of "future-proofing" their networks; they can now offer more advanced services over the same fiber. These upgrades have been going on for the last two years, but this is the first iteration of the list that documents the change.

JUSTIFICATIONS FOR FIBER TO THE PREMISES

Some of the reasons independents have told us they are building fiber networks include:

- Their old copper plant was failing and they didn't want to replace it with more copper that would soon be obsolete.
- In new housing developments, they found that FTTH was only marginally more expensive to install than copper but would be less costly to maintain and have a longer useful life. (In the last year or so, many providers have found that FTTH is the *less* expensive choice even when only capital cost is included.)
- They wanted to offer video and other advanced services, and decided that DSL had too many limitations. Many rural telcos already owned CATV plants (they are generally exempted from cross-ownership restrictions) and wanted to upgrade their video service without pouring more money into obsolete cable networks.
- Their service areas were losing jobs and population, and they believed fiber would bring more economic opportunities.
- Their service areas were growing rapidly, and new residents moving in from metropolitan areas were attracted to fiber as an amenity.
- They saw opportunities to compete in underserved areas outside their traditional service areas where residents were unhappy with the available choices for video and/or Internet service.

Independents rarely compete with one another, so they tend to regard each other as colleagues. They share experiences and they pool information. As information spreads, one success gives rise to another – and over the last several years, with fiber deployment costs falling and the cost of copper rising, more and more independents have been encouraged to try out this new technology.

BY THE NUMBERS

1. The great majority of independent telcos building fiber networks are incumbent providers or CLEC subsidiaries of incumbents.

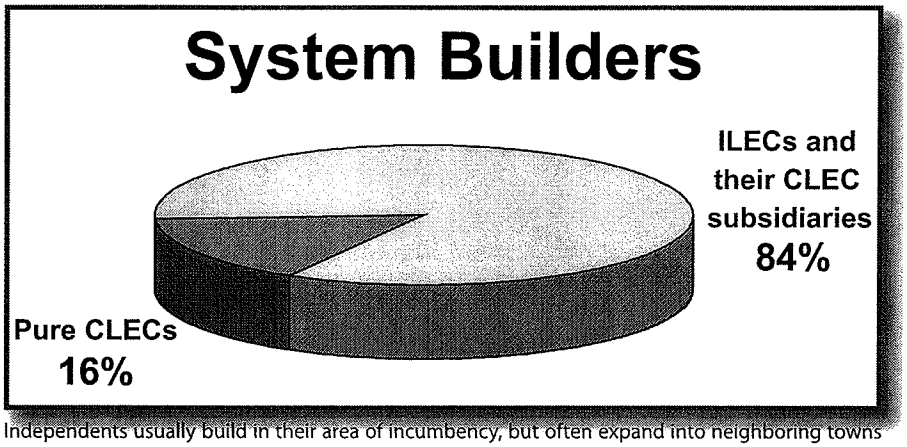
Five out of six companies on our list are ILECs (incumbent carriers dating back before 1996) that are either replacing old copper plant with fiber, building fiber to new developments in their service areas, or overbuilding towns near their service areas where they have name recognition – or some combination of the three. In most states they must form

WHAT IS AN INDEPENDENT TELCO?

The companies that appear on this list are licensed providers of wireline voice services other than Verizon, AT&T and Qwest. They are regulated in the US as ILECs (incumbent providers) or CLECs (competitive providers) or both. The majority are rural providers, many of them cooperatives, set up 50 or more years ago to offer telephone service in regions not covered by the Bell system. A smaller number came into existence after the Telecommunications Act of 1996, some specifically to build fiber-to-the-home networks in new housing developments, others to serve businesses or to offer telecommunications alternatives for underserved areas.

Today, many companies other than traditional telcos deliver reliable, interconnected voice service, using either cellular or IP networks. From a functional viewpoint, excluding these companies is somewhat arbitrary, especially because many traditional telephone companies also offer both wireless service and wireline VoIP service. Some of these non-telco companies are functionally no different from CLECs. However, telcos still exist as a historical and legal category, and our definition is consistent with industry usage.

To the extent possible, we have excluded from the list telcos whose only involvement with FTTH is delivering services over fiber access networks that they do not own and were not involved in building – for example, networks owned by municipalities or housing developers.



Independents usually build in their area of incumbency, but often expand into neighboring towns as CLECs.

CLEC subsidiaries in order to move outside their traditional service areas, but we still list them as ILECs even if their fiber-to-the-home networks are only in their CLEC areas.

The remaining companies are pure CLECs (competitive carriers) with no traditional geographic base. These companies seek out promising territories to overbuild with fiber. A few of them build hybrid fiber-coax networks in some areas and FTTH networks in others.

The proportion of ILECs to CLECs has remained surprisingly constant during the three and a half years we have been tracking telcos' fiber builds, even though the number of companies on the list has increased nearly tenfold.

Most of the pure CLECs originally focused on collaborating with housing developers to build networks in greenfield developments and master-planned communities, but given the shortage of new housing, some have turned to overbuilding. A few, like ComSpan USA and Hiawatha Broadband, adopted an overbuilding model from the start.

While the typical independent telco serves a few thousand customers in one or two rural counties, the companies on this list range from corporate giants like Windstream Communications, which serves 3 million customers in 16 states, to tiny cooperatives like Allband Communications, with a base of 300 customers in a remote corner of Michigan. Likewise, their fiber deployments range from SureWest's more than 125,000 homes passed to pilot projects with less than a hundred homes passed.

2. Most providers plan to deliver, at a minimum, the "triple play" of voice, data and video services.

Delivering advanced video services is often a motivating factor for the fiber buildout. Many independent telcos also manage cable TV networks alongside their telephone networks. Deploying fiber to the home allows them to merge the two, reducing network management costs while adding high-definition TV, DVR, video on demand and a wider selection of channels.

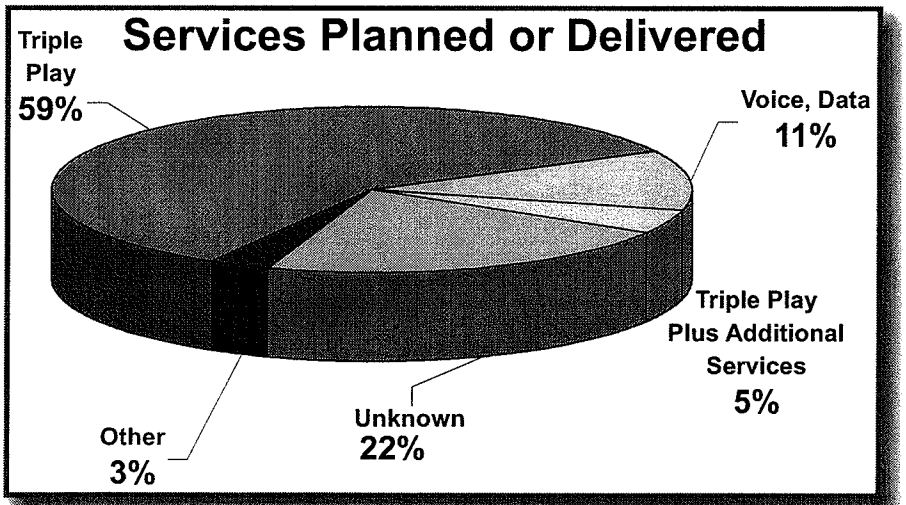
Beyond the triple play, the most common additional service is security monitoring. Gaming, caller ID on TV and PC (convergent applications), and business applications are also being offered by some telcos.

Recent FTTP announcements have increasingly mentioned all-IP networks. VoIP is now often used in place of traditional switched telephony, just as IPTV is displacing R/F video.

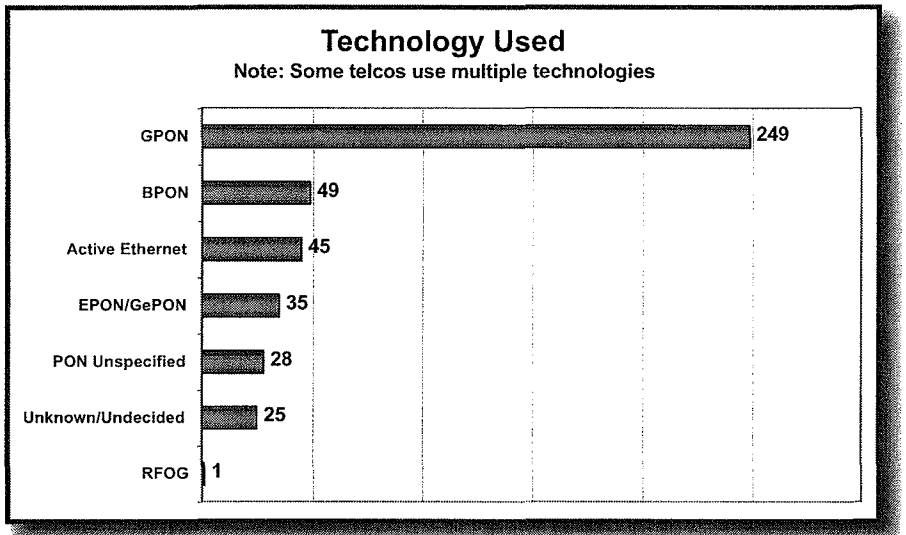
3. Companies are choosing more advanced FTTP technology options.

Our first published list included mainly BPON systems, with a few EPON and one active Ethernet system. Today, while PON remains by far the most popular choice, at least 45 independent telcos are using active (point-to-point) Ethernet for one or more fiber projects.

Gigabit passive networks, both GPON and GePON, have become much more widely used during the last two years. GPON is the PON of choice for this group – three-quarters of the companies with passive optical networks, including almost all of the new additions to the list, have adopted the GPON standard. The migration from BPON to GPON has been speeded lately by the availability of Calix's auto-sensing optical network terminal, which allows telcos to upgrade central office equip-



Video is usually necessary to recoup the cost of an FTTH network. The "triple play" has become standard and even more services are offered by some; expect that trend to continue.



Passive optical networks are far more common than "active" point-to-point networks, but P2P is gaining in popularity. Gigabit PON is also replacing older, slower standards.

Converting from BPON to GPON has been made easier with auto-sensing optical network terminals at the customer premises that don't have to be changed out when the central office equipment is upgraded.

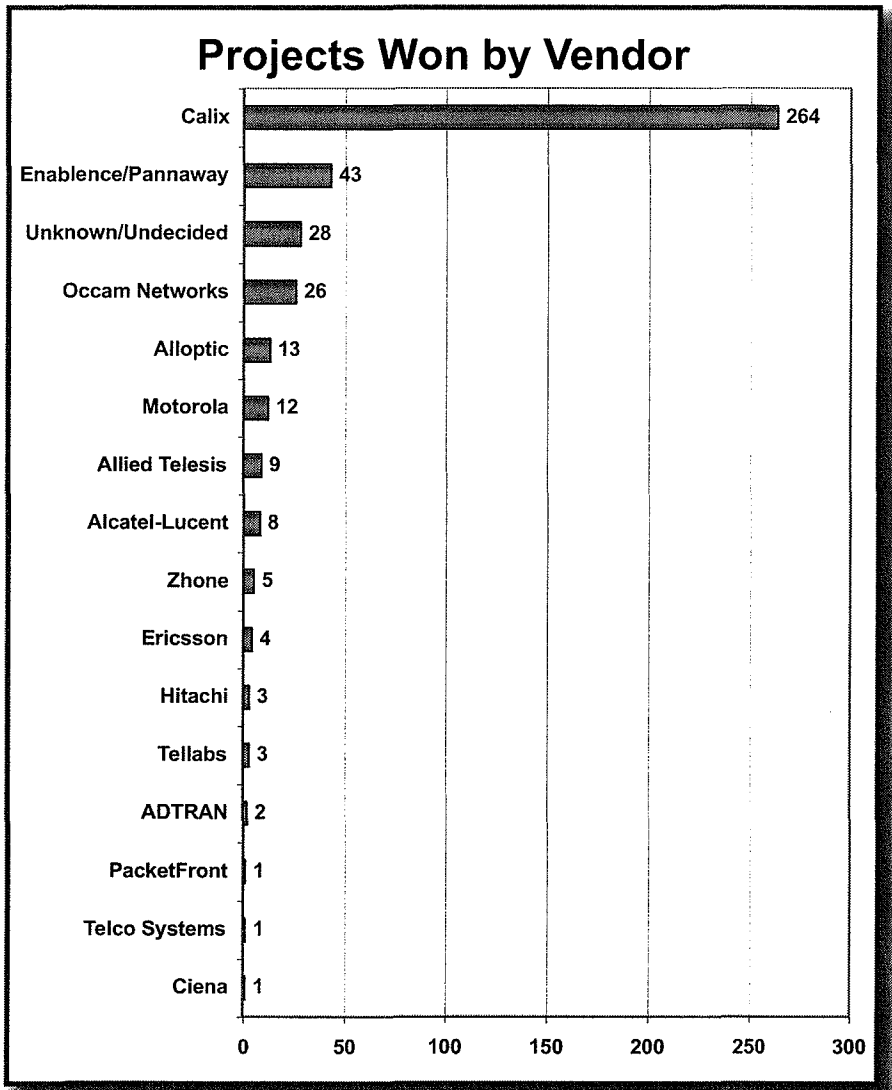
ment without having to change out the customer premises equipment.

The number of telcos using multiple types of technologies, while still small, continues to grow. Our list shows at least 11 percent with multiple technologies, most often BPON and GPON. While many companies find it simpler to stay with the technology (and vendor) they have used successfully, others find that their needs change over time, that newer technologies allow them to upgrade their services, or that requirements vary from one part of their service area to another.

Technical factors also encourage the use of multiple access technologies. One recent development is that different technologies can now sometimes be combined in a single multiservice access platform, such as Enablence's Trident platform.

4. Many vendors are competing successfully in the independent telco market.

When independent telcos first began deploying fiber, nearly all of them used FTTH electronics from Optical Solutions, Inc. When Calix bought OSI, it maintained OSI's substantial lead in this market. More than two thirds of the telcos on our list use at least some Calix equipment – a proportion that has remained relatively stable recently.



Calix remains the leading vendor in this market, though several other vendors have substantial numbers of customers. Enablence's recent acquisition of Pannaway makes it a larger force in this market.

However, as the independent telco market grows and as equipment becomes more standardized and interoperable (a trend that Calix has encouraged), other vendors have also become successful at competing in this market. Over 40 percent of the telcos on the list have bought equipment from electronics vendors other than Calix.

About 10 percent of the telcos have purchased FTTH electronics from more than one vendor. For the most part, telcos that are dealing with multiple vendors are using different systems in different geographical areas or replacing one vendor's equipment with another's; we haven't seen significant instances of electronics vendors partnering to build networks, although often the same equipment appears under several different brand names. This is possible because standards-setting organizations are encouraging interoperability.

The FTTH equipment manufacturers that have supplied the electronics for Verizon's FiOS build – Motorola, Alcatel-Lucent and Tellabs – have been much less successful with the smaller telcos, though each of them has some customer wins in this group. Most of the smaller providers appear to prefer dealing with vendors that specialize in customers like themselves and are accustomed to providing end-to-end solutions.

Like most maturing technology industries, the FTTH equipment industry has undergone a series of mergers and acquisitions over the last several years. In addition to the Calix acquisition of OSI, Wave7 Optics, Pannaway and TelStrat have now been brought under the Enablence umbrella, Ericsson has acquired Entrisphere and Occam acquired Terawave's FTTH business. While independent telcos may have fewer choices, they probably have better choices as a result; these consolidations have resulted in companies that can provide a wider range of access technologies and service wider geographical markets. **BBP**

Consolidation in the FTTH electronics industry means fewer choices for telcos, but it may also mean better choices, because the merged entities can provide a wider range of access technologies.

About the Author

Masha Zager is the deputy editor of Broadband Properties. She can be reached at masha@broadbandproperties.com.

TELCOS BUILDING FTTP NETWORKS, BY STATE

Our count of independent telco FTTP networks by state again shows Iowa in the lead – not surprising, since Iowa has close to 250 rural telcos, far more than any other state. But Minnesota and Texas are close behind, and we've documented current or pending builds by independent telcos in 47 states, the District of Columbia, Puerto Rico and even American Samoa. Only Massachusetts, Delaware and Rhode Island are missing from the list.

State	No.	State	No.
IA	34	UT	7
MN	26	WA	6
TX	24	CO	6
GA	19	MO	6
WI	19	PA	6
KS	19	TN	6
OH	15	AR	5
OR	13	KY	4
NY	13	LA	4
ND	12	NM	4
NC	12	WV	4
MI	12	WY	4
MT	11	AK	3
ID	11	ME	3
SC	11	NV	3
SD	11	MS	3
AL	10	VT	3
IL	10	HI	2
AZ	9	MD	2
CA	9	DC	1
IN	9	PR	1
FL	9	NJ	1
VA	9	NH	1
OK	8	CT	1
NE	8	Samoa	1

The following table shows independent telcos that have constructed FTTP networks or are actively planning them. Many of the companies identified as ILECs are installing FTTP through their CLEC subsidiaries. We've made every effort to update the names of vendors and deployers to reflect mergers and rebrandings. If your company is missing, or if the information is incomplete, send corrections to masha@broadbandproperties.com. We update this list daily on www.broadbandproperties.com/search.php

Provider	States	Vendor – FTTH Electronics	Date	Greenfield/ Overbuild/ Replace	Technology	Services	USDA Rural Dev Loan	Prov. Type
3 Rivers Communications	MT	Calix, Pannaway, Occam Networks	2006	R	PON, Active Ethernet	Voice, Data, Video		ILEC
Adak Telephone	AK	Calix			GPON	Voice, Data, Video		ILEC
Adams Telephone Cooperative	IL	Calix	2006	R	GPON	Voice, Data, Video		ILEC
Albany Mutual Telephone Association	MN	Pannaway	2006	R	Active Ethernet	Voice, Data, Video		ILEC
Alenco Communications (Pathway Com-Tel)	TX	Calix	2002	O, G	PON	Voice, Data, Video		ILEC
All West Communications	UT	Calix	2004	O	GPON	Voice, Data, Video		ILEC
Allband Communications Cooperative	MI	Calix	2005	G	GPON	Voice, Data, Video, Security	✓	ILEC
Allendale Communications	MI	Pannaway	2005	G	Active Ethernet	Voice, Data, Video		ILEC
Alliance Communications	SD	Calix	2006	R	GPON	Voice, Data		ILEC
Allo Communications	NE		2005	O	Active Ethernet	Voice, Data, Business services		CLEC
Alma Communications	MO	Pannaway, Calix	2006	R	GPON	Voice, Data, Video		ILEC
Alpine Communications	IA	Occam Networks	2007	R	Active Ethernet	Voice, Data		ILEC
American Samoa Telecom		Calix	2008		GPON			ILEC
Arvig Communications (East Otter Tail)	MN	Calix	1995	R, G	GPON	Voice, Data, Video		ILEC
Astound Broadband	CA	Alloptic	2004	R	EPON	Voice, Data		CLEC
ATC Communications	ID	Calix	2008		GPON	Voice, Data, Video		ILEC
ATMC	NC	Motorola	2005	G	BPON	Voice, Data, Video		ILEC
Aztech Cable	AZ	Calix		O	GPON	Voice, Data, Video		CLEC
Baldwin Telecom	WI	Calix	2002	G	GPON	Voice, Data, Video	✓	ILEC
Baraga Telephone	MI	Calix			BPON	Voice, Data, Video		ILEC
Barry County Telephone	MI	Calix			GPON			ILEC
Bascom Mutual Telephone Company	OH	Calix	2003	O	BPON	Voice, Data, Video		ILEC
BEK Communications	ND	Calix	2004	R	GPON	Voice, Data		ILEC
Ben Lomand Telephone Co-op	TN	Occam Networks	2006	R	Active Ethernet	Voice, Data, Video		ILEC
Benkelman Telephone Company (Wauneta Telephone, BW Telcom)	NE	Calix	2009		GPON			ILEC
Benton Cooperative Telephone Company (Milaca Local Link)	MN	Calix, Alloptic	2005	G	GPON, GePON	Voice, Data, Video		ILEC
Big Bend Telephone	TX	Calix, Pannaway	2005	R	GPON	Voice, Data, Video		ILEC
Blair Telephone (HunTel)	NE	Calix			GPON			ILEC
Bloomer Telephone	WI	Calix	2007	R	GPON	Voice, Data, Video	✓	ILEC
Bloomingdale Communications	MI	Calix	2006	O	GPON	Video, Voice, Data		ILEC
Blue Valley Tele-Communications	KS	Tellabs	2006	R	GPON	Voice, Data, Video		ILEC
Border to Border Communications	TX	Calix, Alloptic	2004	R	BPON, GePON	Voice, Data, Video	✓	ILEC
Brantley Telephone	GA	Calix	2007	R	GPON	Voice, Data, Video		ILEC
Broadband Associates	CA			O				CLEC
BroadStar	NC		2005	G		Voice, Data, Video, Security		CLEC
Broadweave Networks	UT	Telco Systems	2005	G	Active Ethernet	Voice, Data, Video, Gaming		CLEC
BTC (Western Iowa Networks)	IA		2008			Voice, Data, Video	✓	ILEC
BTC Broadband	OK	Calix	2005	G, R	GPON	Voice, Data, Video		ILEC
Buckeye Telesystem	OH	Calix	2006	O	GPON	Voice, Data		CLEC

Provider	States	Vendor – FTTH Electronics	Date	Greenfield/ Overbuild/ Replace	Technology	Services	USDA Rural Dev Loan	Prov. Type
Buckland Telephone Company	OH	Calix	2005	R	GPON	Voice, Data, Video		ILEC
Buggs Island Telephone Cooperative	VA	Calix	2009		GPON			ILEC
Bulloch Telephone Cooperative	GA	Motorola	2005	R	PON	Voice, Data, Video		ILEC
Cal-Ore Communications	OR	Calix	2005	G	GPON	Voice, Data, Video		ILEC
Calaveras Telephone	CA	Calix	2006	G	GPON	Voice, Data, Video	✓	ILEC
Cambridge Telephone	ID	Calix	2005	R	GPON	Voice, Data, Video		ILEC
Cameron Communications	LA	Calix	2004	R	GPON	Voice, Data, Video		ILEC
Canby Telcom	OR	Calix	2006	G, R	GPON	Voice, Data, Video		ILEC
Cap Rock Telephone Cooperative	TX	Calix	2005	G	GPON	Voice, Data, Video		ILEC
Cascade Telephone	IA	Calix			GPON			ILEC
Centennial de Puerto Rico	PR	Occam Networks	2007	R	Active Ethernet	Voice, Data		CLEC
Central Texas Technologies	TX	Alloptic	2002	G	EPON	Voice, Data, Video		CLEC
CenturyTel	AL, CO, MI, MO, WI	Calix			GPON	Voice, Data, Video		ILEC
Champaign Telephone	OH	Calix			GPON			ILEC
Chariton Valley Telecom Corporation	MO	Enablence	2003	R, O	PON	Voice, Data, Video		ILEC
Chesnee Telephone	SC	Calix		G	GPON	Voice, Data, Video		ILEC
Cheyenne River Sioux Tribe Telephone	SD	Calix			GPON			ILEC
Chibardun Telephone Cooperative	WI	Calix	2007	R	GPON	Voice, Data, Video		ILEC
Chickamauga Telephone	GA	Calix	2008		GPON			ILEC
ChoiceTEL Communications	WI		2008	O		Video, Data, Voice		CLEC
Christensen Communications	MN	Calix	2008	R	BPON, GPON	Video, Data, Voice		ILEC
Cimarron Telephone	OK	Calix	2008		GPON			ILEC
Cinergy MetroNet	IN	Alcatel-Lucent	2005	O	BPON	Voice, Data, Video	✓	CLEC
Citizens Mutual	IA	Calix	2006	R	GPON	Voice, Data, Video		ILEC
Citizens Telephone Company	GA	Alloptic	2008	R	GePON	Voice, Data, Video		ILEC
Citizens Telephone Company of Kecksburg	PA	Calix	2005	R	PON	Voice, Data, Video		ILEC
Citizens Telephone Coop	WI	Calix			GPON			ILEC
Citizens Telephone Cooperative	VA	Calix	2004	R	GPON	Voice, Data, Video		ILEC
Clarence Telephone	IA	Calix			BPON, GPON			ILEC
Clear Lake Telephone	IA	Calix	2008	R	GPON	Voice, Video, Data		ILEC
Clearwave Communications	IL	Calix			GPON			CLEC
Colo Telephone Company	IA	Calix	2005	R	GPON	Voice, Data, Video	✓	ILEC
Columbus Telephone Company	KS	Enablence	2004	R	EPON	Voice, Data, Video		ILEC
Communications 1 Network	IA	Calix	2008		GPON			ILEC
Comporium Communications	SC	Enablence	2004	G	EPON, GPON	Voice, Data, Video, Converged services		ILEC
ComSouth Telecommunications	GA	Calix, Motorola	2005	R, G	PON	Voice, Data, Video		ILEC
ComSpan USA	OR	Hitachi	2005	O	GPON	Voice, Data, Video		CLEC
Connections Etc. (Sherburne County Rural Telephone Co./Iowa Telecom)	MN	Calix	2008		GPON			ILEC
Consolidated Communications Inc.	IL, TX	Zhone Technologies	2007		GPON	Voice, Data, Video		ILEC
Consolidated Telcom	ND	Calix	2006	R	GPON	Voice, Data, Video		ILEC
Consolidated Telecommunications Company	MN	Calix	2005	O	GPON	Voice, Data, Video		ILEC

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Conxxus (Illicom Telecommunications)	IL	Enablence	2001	O	EPON	Voice, Data, Video		CLEC
Cooperative Telephone Exchange	IA	Occam Networks	2006	R	Active Ethernet	Voice, Data, Video	✓	ILEC
Corn Belt Telephone	IA		2008	R		Voice, Data, Video		ILEC
CP-Tel	LA	Calix	2004	G	BPON	Voice, Data, Video		ILEC
Craigville Telephone Company	IN	Calix	2006	O	GPON	Voice, Data, Video		ILEC
Cross Communications	OK	Calix			GPON	Voice, Data, Video		ILEC
CSS Communications	WA	Alloptic	2003	R	EPON	Voice, Data, Video		CLEC
CT Communications	NC	Enablence	2005	G	EPON	Voice, Data		ILEC
Custer Telephone Cooperative	ID	Calix	2006	R	GPON	Voice, Data, Video		ILEC
D&E Communications	PA	Calix	2008		GPON			ILEC
D&P Communications	MI	Motorola	2008		GPON	Voice, Data, Video		ILEC
Dakota Central Telecom	ND	Calix	2002	R, O	GPON	Voice, Data, Video	✓	ILEC
Darien Telephone	GA	Calix			GPON			ILEC
Daystarr Communications	MI	Calix	2008	O	GPON			CLEC
DFT Communications	NY	Calix			GPON			ILEC
Dickey Rural Networks	ND	Calix	2004	R	GPON	Voice, Data, Video		ILEC
Direct Communications	OR, WA, ID, UT	Calix		G	BPON, GPON	Voice, Data		ILEC
Dobson Telephone	OK	Calix			GPON			ILEC
Dumont Telephone Company	IA	Hitachi	2006	R	GPON	Voice, Data, Video		ILEC
EasyTel Communications	OK	Calix	2005	O	PON	Voice, Data, Video		CLEC
EATEL	LA	Alcatel-Lucent, Calix	2004	R, G	BPON, GPON	Voice, Data, Video, Converged services		ILEC
Elkhart Telephone	KS	Enablence	2005	R	EPON	Voice, Data, Video		ILEC
EMBARQ	MANY	Calix		G	GPON	Voice, Data, Video		ILEC
Emily Cooperative Telephone Company	MN		2007			Voice, Data, Video		ILEC
En-Touch Systems	TX	Enablence	2006	G	EPON	Voice, Data, Video, Security		CLEC
Endeavor Communications	IN	Calix	2006	R	GPON	Voice, Data, Video		ILEC
Enhanced Telecommunications Corporation	IN	Calix	2004	O	GPON	Voice, Data, Video		ILEC
ENMR-Plateau Telecommunications	NM	Calix, Occam Networks	2003	R	PON	Voice, Data		ILEC
Etex Telephone Cooperative	TX	Calix, Pannaway	2002	O	Active Ethernet, GPON	Voice, Data		ILEC
F&B Communications	IA	Calix			BPON, GPON	Data, Video, Voice		ILEC
FairPoint Communications	WA, MANY	Occam Networks, Calix		G	GPON			ILEC
Falcon Broadband	CO	Enablence, Hitachi	2005	G	EPON, GPON	Voice, Data, Video		CLEC
Farmers and Merchants Mutual Telephone Company	IA	Calix	2007		BPON, GPON	Video, Data, Voice		ILEC
Farmers Mutual	ID	Calix		R	BPON, GPON	Voice, Data, Video		ILEC
Farmers Mutual	MN	Calix			GPON	Voice, Data, Video		ILEC
Farmers Telecommunications Cooperative	AL	Occam Networks	2007	R, G	Active Ethernet	Voice, Data		ILEC
Farmers Telephone Cooperative	SC	Occam Networks	2006	G	Active Ethernet	Voice, Data, Video		ILEC
FEC Communications (Connextions Telecom)	TX	Calix	2006	G	PON	Data, Video, Voice		CLEC

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Federated Telephone	MN	Calix	1996	O, R	GPON	Voice, Data, Video		ILEC
FiberNet	WV, OH	Calix	2007	O	BPON, GPON	Voice, Data, Videoconferencing		CLEC
Fibertech Networks	NY	Calix, Ericsson	2006		BPON, GPON	Data, Business services		CLEC
Fidelity Telephone	MO	Calix			BPON			ILEC
Filer Mutual	ID	Calix			GPON			ILEC
Foothills Rural Telephone Coop	KY	Alcatel-Lucent	2004	R, G	BPON	Voice, Data, Video	✓	ILEC
Fort Jennings Telephone Company	OH	Calix	2004	O, R	GPON	Voice, Data, Video		ILEC
Fort Mojave Telecommunications	AZ	Calix	2008	R, G	GPON	Voice, Data	✓	ILEC
Frontier Communications	MANY	Calix		G	BPON, GPON	Voice, Data		ILEC
FTTH Communications	MN	Calix	2002	G	GPON	Voice, Data, Video		CLEC
Ganado Telephone	TX	Occam Networks	2008	R	Active Ethernet	Voice, Data		ILEC
Garden Valley Telephone	MN	Calix	2005		BPON, GPON	Voice, Data, Video		ILEC
Gardonville Cooperative Telephone Association	MN		2006	R				ILEC
General Communications	AK	Calix		R	GPON	Voice, Data		CLEC
Gervais Telephone	OR	Calix	2001	O	GPON	Voice, Data, Video		ILEC
Gila River Telecommunications	AZ	Calix			BPON, GPON			ILEC
Glenwood Telephone	NE	Calix	2007	R	BPON, GPON	Voice, Data, Video		ILEC
Global Valley Networks	CA		2005	G	PON	Voice, Data		ILEC
Golden Belt Telephone Association	KS	Occam Networks	2008	R	Active Ethernet	Voice, Data, Video		ILEC
Golden West Telephone Company	SD	Calix	2004	R	GPON	Voice, Data		ILEC
Goldfield Telephone Company	IA		2007	O, R		Voice, Data, Video	✓	ILEC
Gorham Telephone	KS	Calix	2007	R	GPON	Voice, Data, Video		ILEC
Grand Mound Cooperative Telephone Association	IA	Calix	2005	O, R	PON	Voice, Data, Video	✓	ILEC
Grande Communications	TX	Ericsson	2005	O	PON	Voice, Data, Video		CLEC
Great Plains Communications	NE	Pannaway	2007	G, R	GPON	Voice, Data		ILEC
Greenfield Communications	AZ, CA	Calix, Alloptic	2005	G	GPON, GePON	Voice, Data, Video		CLEC
Gridley Telephone	IL	Calix	2006		BPON	Voice, Data, Video		ILEC
GTel Teleconnections (Germantown Telephone)	NY	Calix	2008	R	GPON	Voice, Data, Video, Videoconferencing		ILEC
Guadalupe Valley Telecommunications Cooperative	TX	Calix	2004	G, R, O	GPON	Voice, Data, Video, Security		ILEC
Gulfpines Communications	MS	Calix			GPON			ILEC
H&B Communications	KS	Calix			GPON			ILEC
Hancock Telecom	IN	Enablence	2002	G	EPON	Voice, Data, Video		ILEC
Hargray Communications	SC	Alloptic	2004	G	EPON	Voice, Data, Video		ILEC
Harrisonville Telephone	IL	Calix	2007	G	BPON, GPON	Voice, Data, Video		ILEC
Hawaiian Telecom	HI	Alcatel-Lucent	2006	G, R	GPON	Voice, Data, Video		ILEC
Hayneville Telephone	AL	Pannaway	2008	O	GPON	Voice, Data, Video	✓	ILEC
Heart of Iowa Communications Cooperative	IA	Calix	2005	R	BPON, GPON	Voice, Data, Video		ILEC
Hiawatha Broadband	MN	Calix	2005	O	GPON	Voice, Data, Video		CLEC
Hickory Tech (Enventis)	MN, WI	Calix, Motorola	2002		BPON, GPON	Voice, Data, Video		ILEC

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Highland Telephone Cooperative	VA	Pannaway	2007		GPON	Voice, Data, Video		ILEC
Highland Telephone Cooperative	TN	Calix	2008		GPON	Voice, Data, Video		ILEC
Hill Country Telephone Cooperative	TX	Occam Networks	2007	R	Active Ethernet	Voice, Data, Video		ILEC
Hinton Telephone	OK	Calix	2002		BPON			ILEC
Home Telephone	SC	Calix	2001	G	GPON	Voice, Data, Video		ILEC
Home Town Telephone (Home Town Cable Plus)	FL	Calix	2004	G	GPON	Voice, Data, Video, Security		CLEC
Hood Canal Telephone Company	WA	Motorola	2004	R	PON	Voice, Data, Video	✓	ILEC
Horizon Chillicothe Telephone	OH	ADTRAN, Calix	2007		GPON	Voice, Data, Video	✓	ILEC
Horry Telephone Coop	SC	Motorola	2004	G	PON	Voice, Data, Video		ILEC
Hotwire Communications	FL, VA, NJ, NY, PA, GA, SC, NC, MD	Calix, Motorola		G, O	GPON	Voice, Data, Video, Home automation		CLEC
Huxley Telephone	IA	Calix	2001	O, R	PON	Voice, Data, Video		ILEC
iCornerstone	GA	Alloptic	2004	G	EPON	Voice, Data, Video		CLEC
IdeaOne Telecom Group	ND	Calix	2002	O	GPON	Voice, Data, Video, Business services		CLEC
Indiantown Telephone System	FL	Calix	2006	G	PON	Voice, Data, Video		ILEC
InterBel Telephone Cooperative	MT					Voice, Data, Video		ILEC
Interstate Telecommunications Cooperative (SS Telecom)	SD	Calix	2006	O, R	BPON, GPON, Active Ethernet	Voice, Data, Video	✓	ILEC
Jaguar Communications	MN	Calix	2006	O	GPON	Voice, Data, Video	✓	CLEC
Johnson Telephone Company	MN	Calix	2008		GPON	Voice, Data, Video		ILEC
Kalida Telephone	OH	Calix			GPON			ILEC
Kanokla Telephone	KS	Calix			GPON			ILEC
Kaplan Telephone	LA	Calix	2005	R	GPON	Voice, Data, Video		ILEC
Kerman Telephone Company	CA							ILEC
KMTelecom	MN		2008	R				ILEC
Knology	AL, GA, TN, FL, SC	Ericsson, Enablence	2005	G, R, O	EPON	Voice, Data, Video, Business services		CLEC
LaHarpe Telephone	KS	Calix	2006	R	GPON	Voice, Data, Video		ILEC
Laurel Highland Telephone Company	PA	Calix	2003	R	GPON	Voice, Data, Video		ILEC
Lavalle Telephone Cooperative	WI	Occam Networks	2006	G	Active Ethernet	Voice, Data, Video	✓	ILEC
Lehigh Valley Cooperative Telephone Association	IA	Calix			GPON			ILEC
Lemonweir Valley Telephone	WI	Calix	2008	R	GPON	Voice, Data, Video		ILEC
Lexcom	NC	Alloptic, Enablence	2007	R	RFOG, GePON	Voice, Data, Video		ILEC
Liberty Communications	IA	Calix	2008	R	GPON	Voice, Data, Video		ILEC
Lightnex Communications (formerly Vivid)	MT	Calix	2002	G	BPON	Voice, Data, Video		CLEC
Ligonier Telephone	IN	Calix	2008	R	GPON	Voice, Data, Video		ILEC
Lincoln County Telephone System	NV	Alcatel-Lucent	2008	G, R	GPON	Voice, Data, Video, Security		ILEC
Lincoln Telephone	MT	Calix			GPON			ILEC
LISCO	IA	Occam Networks	2005	O	Active Ethernet	Voice, Data, Video	✓	CLEC
Litestream Technologies	FL	Calix	2002	G	PON	Voice, Data, Video, Security		CLEC

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Long Lines	NE	Enablence	2007	O	GePON	Voice, Data, Video		ILEC
Lonsdale Telephone	MN	Calix			GPON			ILEC
Lost Nation-Elwood Telephone	IA	Calix			GPON			ILEC
Mabel Telephone Cooperative	MN	Pannaway	2006	R	PON	Voice, Data, Video		ILEC
Madison Telephone	KS	Calix	2009		GPON			ILEC
Mahaska Communications Group	IA	Calix	2004	O	GPON	Voice, Data, Video		CLEC
Manti Tele Communication Company	UT	Pannaway	2008	R	Active Ethernet	Voice, Data, Video		ILEC
Marquette-Adams Telephone Cooperative	WI	Occam Networks	2008	R	GPON	Voice, Data, Video		ILEC
Matanuska Telephone Association	AK	Calix	2007	G, R	BPON, GPON	Voice, Data, Video		ILEC
McClure Telephone Company	OH	Enablence	2006	R	GPON	Voice, Data, Video	✓	ILEC
McCook Cooperative	SD	Calix			GPON			ILEC
McDonough Telephone Cooperative	IL	Calix	2007	R	GPON	Voice, Data, Video		ILEC
Medicine Park Telephone Company	OK		2008	G				ILEC
Metrostat Communications	NC	Alloptic	2006	O	GePON	Voice, Data		CLEC
Mid-Rivers Communications	MT			R		Voice, Data, Video		ILEC
Middleburgh Telephone Company	NY	Calix	2008		GPON	Voice, Data		ILEC
Midstate Communications	SD		2008	R			✓	ILEC
Midstate Telephone	ND	Calix			GPON			ILEC
Midvale Telephone	AZ	Calix			BPON, GPON			ILEC
Minburn Telephone	IA	Calix		R	BPON, GPON	Voice, Data, Video		ILEC
Minford Telephone Company	OH	Calix	2009		GPON			ILEC
Minnesota Valley Telephone	MN	Calix			GPON			ILEC
Missouri Telephone	MO	Allied Telesis	2006	G	Active Ethernet	Voice, Data, Video		ILEC
MoKan Dial	KS, MO	Calix			BPON			ILEC
Molalla Communications Company	OR	Calix	2004	G	GPON	Voice, Data		ILEC
Momentum	AL	Alcatel-Lucent	2007	G	GPON	Voice, Data, Video, Security		CLEC
Montana Opticom	MT	Calix	2005	G	GPON	Voice, Data, Video		CLEC
Mosinee Telephone	WI	Calix			GPON			ILEC
Moundville Telephone Company	AL		2008	G		Voice, Data		ILEC
Mountain View Telephone (Yelcot Telephone)	AR	Calix			GPON			ILEC
MTCO Communications	IL	Calix	2008		GPON	Voice, Data		ILEC
Mutual Telephone Company	KS	Calix	2008	R	GPON			ILEC
Nehalem Telecommunications	OR	Calix			BPON, GPON			ILEC
Nemont Telephone Cooperative	MT	Calix	2006	R	GPON			ILEC
Nevada Comstock Communications	NV		2008	G		Voice, Data		CLEC
New Hope Telephone Cooperative	AL	Calix, Occam Networks	2006	R	PON	Voice, Data, Video	✓	ILEC
New Knoxville Telephone Company	OH	Enablence	2004	R	EPON	Voice, Data, Video		ILEC
Niagara Telephone Company	WI	Calix	2008		GPON			ILEC
Nortex Communications	TX	Calix	2007	R	GPON	Voice, Data, Video	✓	ILEC
North Central Telephone Cooperative	TN	Occam Networks	2007	R	Active Ethernet	Voice, Data, Video		ILEC
North Dakota Telephone Company	ND	Allied Telesis	2005	R	Active Ethernet	Voice, Data, Video		ILEC
North Penn Telephone Company	PA	Calix	2008		GPON	Voice, Data, Video		ILEC

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North State Communications	NC	Calix	2005	G	BPON, GPON	Voice, Data		ILEC
North-State Telephone Company	OR	Calix		R	GPON	Voice, Data		ILEC
Northeast Florida Telephone Company	FL	Calix	2005	G	GPON	Voice, Data		ILEC
Northern Telephone Cooperative	MT	Calix	2008	R	GPON			ILEC
Northwest Communications Cooperative	ND	Calix	2008	R	GPON	Voice, Data, Video		ILEC
Nsight	WI	Pannaway	2003	G	Active Ethernet	Voice, Data, Video		ILEC
NTELOS	VA	Alcatel-Lucent, Tellabs, Ciena	2006	R	GPON	Voice, Data, Video, Converged services		ILEC
Omnilec	IL	Calix			BPON			CLEC
Openband	VA, MD, DC	Calix	2005	O	GPON	Voice, Data, Video, Security		CLEC
Optimum Lightpath	CT NY	Cisco			Active Ethernet	Business services, Voice, Data, Video		CLEC
Oregon Telephone	OR	Calix	2006	R	GPON			ILEC
Orlando Telephone Company	FL	Enablence	2007	O	GePON	Voice, Data, Video		CLEC
Oxford Networks	ME	Calix	2001	O, R	GPON	Voice, Data, Video		ILEC
Panora Cooperative Telephone Association (Guthrie Center)	IA	Calix	2002	O	GPON	Voice, Data, Video		ILEC
Parker FiberNet	GA	Occam Networks, Calix	2006	R	GPON	Voice, Data		CLEC
Paul Bunyan Rural Telephone Cooperative	MN	Calix, Allied Telesis	2004	O, R	GPON, EPON, Active Ethernet	Voice, Data, Video	✓	ILEC
PAXIO	CA	PacketFront	2004	G, O	Active Ethernet	Voice, Data		CLEC
PBT Telecom	SC	Motorola	2005	G	GPON, BPON	Voice, Data, Video		ILEC
Pembroke Telephone Company	GA	Calix	2004	G	GPON	Voice, Data, Video	✓	ILEC
Pembroke Telephone Cooperative	VA	Calix	2008		GPON			ILEC
Penasco Valley Telecommunications	NM	Calix	2008		GPON	Voice, Data, Video		ILEC
Peoples Rural Telephone Cooperative	KY		2008	R		Voice, Data, Video		ILEC
Pine Drive Telephone Company	CO	Calix	2008		GPON	Voice, Data, Video		ILEC
Pine Tree Networks	ME	Calix			BPON			ILEC
Pineland Telephone Cooperative	GA	Occam Networks	2006	R	Active Ethernet	Voice, Data, Video		ILEC
Pinnacle Communications	AR	Calix	2005	R	GPON	Voice, Data, Video		ILEC
Pioneer Telephone Cooperative	OR	Calix			BPON			ILEC
Pioneer Telephone Cooperative	OK	Calix	2008		GPON			ILEC
Plant Telephone	GA	Calix			BPON			ILEC
Planters Telephone Company	GA	Calix	2006	G	GPON	Voice, Data, Video		ILEC
Poka Lambro Telephone Company	TX	Calix	2005	O	GPON	Voice, Data		ILEC
Prairie Grove Telephone Company	AR	Occam Networks	2007	R	Active Ethernet	Voice, Data, Video		ILEC
Premier Communications	IA	Calix			GPON			ILEC
PrimeLink (Champlain Telephone Company)	NY	Calix, Alloptic	2002	O	GePON, GPON	Voice, Data, Video		ILEC
Project Mutual Telephone Co-op	ID	Calix	2005	O, G	GPON	Voice, Data, Video		ILEC
Public Service Telephone Company	GA	Calix	2005	G	GPON	Voice, Data, Video		ILEC
Rainbow Telephone Cooperative Association	KS	Calix	2008		GPON	Voice, Data, Video		ILEC
Randolph Telephone	NC	Calix	2005	G	GPON	Voice, Data, Video		ILEC

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Range Telephone Cooperative (Advanced Communication Technology, Dubois Telephone Exchange)	MT, WY	Calix	2008	O	GPON	Voice, Data, Video		ILEC
Readlyn Telephone Company	IA	Calix	2008	R	GPON	Voice, Data, Video		ILEC
Red River Telephone	ND	Calix	2005	R	GPON	Voice, Data		ILEC
Reliance Connects (Rio Virgin Telephone/Cascade Utilities)	NV	Calix	2008		GPON	Voice, Data, Video		ILEC
Reservation Telephone Cooperative	ND	Calix	2007	R	GPON	Voice, Data, Video		ILEC
Richland-Grant Telephone Cooperative	WI	Occam Networks	2006	G	Active Ethernet	Voice, Data, Video	✓	ILEC
Ridgeville Telephone Company	OH	Enablence	2006	O	GePON	Voice, Data, Video		ILEC
Ringgold Telephone	GA	Enablence, Calix	2004	G	EPON, GPON	Voice, Data, Video		ILEC
Ritter Communications	AR	Pannaway	2006	G, O	Active Ethernet	Voice, Data		ILEC
River Valley Telephone Cooperative	IA	Calix	2008		GPON	Voice, Data, Video		ILEC
Roberts County Telephone Cooperative Association (RC Communications)	SD		2004			Voice, Data, Video	✓	ILEC
Rochester Telephone Company	IN	Enablence	2002	R	PON	Voice, Data, Video		ILEC
Rockwell Cooperative Telephone Association	IA	Pannaway	2007	R	GPON	Voice, Data, Video		ILEC
Ronan Telephone	MT	Calix			BPON			ILEC
Royal Telephone Company	IA	Calix	2005	R	GPON	Voice, Data, Video		ILEC
RT Communications	WY	Pannaway, Calix	2006	R	GPON	Voice, Data		ILEC
Runestone Telephone Association	MN	Calix	2007	R	GPON	Voice, Data, Video		ILEC
Rural Telephone (Nex-Tech)	KS	Calix	2001	O, R	PON, Active Ethernet	Voice, Data, Video	✓	ILEC
Rye Telephone Company	CO	Calix	2002	R	GPON	Voice, Data, Video		ILEC
S&T Telephone Cooperative	KS	Calix	2008	R	GPON	Voice, Data, Video		ILEC
Saddleback Communications	AZ	Calix	2008		GPON			ILEC
San Carlos Apache Telecom	AZ	Calix			BPON			ILEC
San Isabel Telecom	CO	Calix	2002	G	PON	Voice, Data, Video		CLEC
Sandwich Isles Telecom	HI	Calix			GPON			ILEC
Santa Rosa Telephone Cooperative	TX	Calix	2005	O	GPON	Voice, Data, Video		ILEC
Santel Communications	SD	Enablence	2005	O	EPON	Voice, Data, Video	✓	ILEC
Scio Mutual Telephone Association	OR	Calix	2004	R	GPON	Voice, Data, Video		ILEC
Scott County Telephone Coop	VA	Enablence	2004	R	EPON	Voice, Data, Video	✓	ILEC
SCTelcom	KS	Calix	2002	R	GPON, Active Ethernet	Voice, Data		ILEC
Shenandoah Telecommunications	VA, WV	Enablence, Motorola	2006	G	EPON	Voice, Data, Video, Security		ILEC
Sherwood Mutual Telephone Association	OH	Calix		R	GPON	Voice, Data, Video		ILEC
Silver Star Communications	WY	Calix	2005	G	GPON	Voice, Data, Video		ILEC
Siren Telephone	WI	Allied Telesis	2008	R	Active Ethernet	Voice, Data, Video		ILEC
Siskiyou Telephone	CA			R				ILEC
Skyline Membership Corporation	NC	Allied Telesis, Calix	2004	R	PON	Voice, Data, Video		ILEC
Smart City	FL	Calix		G	BPON, GPON	Voice, Data, Video		ILEC
Smithville Telephone	IN	Calix	2008	R	GPON	Voice, Data, Video	✓	ILEC

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Solarus	WI	Calix			GPON	Voice, Data, Video		ILEC
South Central Communications	UT	Calix	2002	G	GPON	Voice, Data		ILEC
South Plains Telephone Cooperative	TX	Calix		G	GPON			ILEC
South Slope Cooperative Communications	IA	Calix		R	GPON	Voice, Data, Video		ILEC
Southwest Michigan Communications	MI	Calix		O	BPON	Voice, Data, Video		CLEC
Spring Grove Communications	MN	Calix	2007	R	GPON	Voice, Data, Video		ILEC
Spruce Knob Seneca Rocks Telephone	WV	Calix	2008	R	GPON	Voice, Data, Video	✓	ILEC
SRT Communications	ND	Zhone Technologies, Calix	2008	G, R	Active Ethernet, GPON			ILEC
St. Paul Cooperative Telephone Association	OR	Calix	2008		GPON			ILEC
State Telephone Company	NY	Calix	2009		GPON			ILEC
Stratford Mutual Telephone Company	IA	Zhone Technologies	2005	R	PON	Voice, Data, Video	✓	ILEC
Sunflower Broadband	KS	Calix, Motorola	2003		GPON			CLEC
SureWest Communications	CA, KS	Calix, Allied Telesis	2001	O, R, G	PON, Active Ethernet	Voice, Data, Video		ILEC
Surry Telephone Membership Corporation	NC	Allied Telesis	2008	R	GePON, Active Ethernet	Voice, Data, Video		ILEC
T2 Communications	MI	Calix	2005	G, O	GPON	Voice, Data, Video		CLEC
Tamarack Video & Telecom	ID	Calix	2008	G	GPON	Video, Data, Voice		CLEC
Taylor Telephone Cooperative	TX	Zhone Technologies	2007	R	GPON	Voice, Data		ILEC
TDS Telecom	WI, MN	Calix, Ericsson	2005	G	GPON	Voice, Data, Video		ILEC
Tech Valley Communications	NY	Calix	2006	O	GPON	Voice, Data		CLEC
TelAtlantic	WV	Tellabs	2006	G	BPON	Voice, Data, Video		ILEC
Telepak Networks	MS	Calix	2005	O	GPON	Voice, Data, Video		ILEC
Telephone Electronics Corporation (TEC)	MS, AL, TN	ADTRAN	2008	R	GPON	Voice, Data, Video		ILEC
Teton Telecom	ID	Calix	2004	G	GPON	Voice, Data, Video		ILEC
Thacker-Grigsby Telephone	KY	Calix			GPON			ILEC
Three River Telco	NE		2008	R			✓	ILEC
Toledo Telephone	WA	Calix	2006	O	GPON	Voice, Data, Video		ILEC
Topsham Telephone	VT		2006			Voice, Data, Video	✓	ILEC
Tri County Telephone (TCT West)	WY	Calix	2004	R	GPON	Voice, Data, Video	✓	ILEC
Triangle Telephone Cooperative	MT		2007	R		Voice, Data, Video		ILEC
Truvista Communications	SC	Calix			GPON	Voice, Data, Video		ILEC
TSC	OH	Calix	2003	O	GPON	Voice, Data, Video		ILEC
Tularosa Basin Telephone Company	NM	Occam Networks	2006	R	Active Ethernet	Voice, Data, Video	✓	ILEC
Twin Valley Telephone	KS	Allied Telesis	2006	R, O	Active Ethernet, GePON	Voice, Data, Video		ILEC
UBTA-UBET Communications	UT	Calix, Occam Networks	2007	G	BPON, Active Ethernet	Voice, Data		ILEC
Union River Telephone Company	ME	Calix	2008	R	GPON	Voice, Data	✓	ILEC
Union Springs Telephone	AL	Calix	2001	R	GPON	Voice, Data, Video		ILEC
Union Telephone	NH	Pannaway	2007	R	Active Ethernet	Voice, Data, Video		ILEC
United Telephone Company	TN	Calix	2004	G	GPON	Voice, Data, Video		ILEC
United Telephone Mutual Aid Corporation	ND	Allied Telesis	2008	R	Active Ethernet	Voice, Data, Video		ILEC

Provider	States	Vendor – FTTH Electronics	Date	Greenfield/ Overbuild/ Replace	Technology	Services	USDA Rural Dev Loan	Prov. Type
United Telesystems	GA	Alcatel-Lucent	2003	O	BPON	Voice, Data, Video		CLEC
Upper Sioux Community	MN	Calix	2009		GPON			ILEC
US SONET	IL	Enablence	2003	O	PON	Voice, Data, Video	✓	CLEC
Valley Telecom Group	AZ	Enablence	2005	R	EPON	Voice, Data, Video	✓	ILEC
Valley Telecommunications Cooperative	SD	Calix	2008	R	GPON	Voice, Data, Video		ILEC
Valley Telephone Cooperative	TX	Pannaway	2005	G	GPON	Voice, Data, Video		ILEC
Venture Communications Cooperative	SD	Calix	2006	R	GPON			ILEC
Vermont Telephone	VT	Calix	2007	R	BPON, GPON			ILEC
Wabash Mutual Telephone	OH	Enablence	2005	O	EPON	Voice, Data, Video		ILEC
Wahkiakum West Telephone	WA			R				ILEC
Waitsfield and Champlain Valley Telecom	VT	Pannaway	2007	G	Active Ethernet	Voice, Data		ILEC
Wamego Telecommunications	KS	Calix	2002	R	GPON	Voice, Data, Video		ILEC
Warwick Valley Telephone Communications	NY	Pannaway, Occam Networks	2006	O	Active Ethernet	Voice, Data, Video		ILEC
Webster-Calhoun Cooperative Telephone Association	IA	Calix	2005	R	GPON	Voice, Data, Video		ILEC
West Central Telephone	MN	Calix	2005	R	PON	Voice, Data, Video		ILEC
West Plains Telecommunications (Five Area Telephone Cooperative)	TX	Alloptic	2006	R	GePON	Voice, Data, Video	✓	ILEC
West River Cooperative Telephone Company	SD	Calix	2007	R	GPON			ILEC
West Texas Rural Telephone Cooperative/W.T. Services	TX	Calix	2007	O	GPON	Voice, Data, Video		ILEC
West Wisconsin Telcom Cooperative	WI	Calix	2007	R	GPON			ILEC
Westel Fiber	ID			G		Voice, Data, Video		CLEC
WesTel Systems	IA	Calix	2009		GPON			ILEC
Westphalia Telephone	MI	Occam Networks	2006	O	Active Ethernet			ILEC
Wide Open West (Sigecom)	IN	Motorola, Occam Networks, Calix	2001	O	GPON	Voice, Data, Video		CLEC
Wiggins Telephone	CO	Calix	2008		GPON	Voice, Data		ILEC
Wilkes Telephone & Electric	GA	Calix	2006	R	GPON	Voice, Data, Video		ILEC
Windstream Communications	AL, AR, FL, GA, KY, NE, NC, SC, TX	Calix	2006	G	GPON	Voice, Data		ILEC
Windwave Communications	OR	Calix	2004	O	PON	Voice, Data, Video		CLEC
Winn Telephone	MI	Calix		O	BPON			ILEC
Winnebago Cooperative Telecom Association	IA	Calix			GPON			ILEC
Wittenberg Telephone	WI	Calix			BPON			ILEC
Xfone (NTS)	TX	Calix	2003	G, O	GPON	Voice, Data, Video	✓	CLEC
XIT Rural Telephone Cooperative	TX	Calix	2008	R	GPON	Voice, Data, Video		ILEC
Yadkin Valley Telecom	NC	Zhone Technologies	2007		GPON	Voice, Data, Video		ILEC
Yucca Telecom	NM	Calix	2005	R	GPON	Voice, Data	✓	ILEC
Zial Networks	ID, UT		2003	G, O	Active Ethernet	Voice, Data, Video		CLEC
Zito Media	PA		2008	O		Voice, Data		CLEC
Zona Communications	AZ	Calix	2005	G	GPON	Voice, Data	✓	ILEC